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THE MOBILE OBSTACLE DETACHMENT OF THE SOVIET GROUND FORCES.(U)

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## STUDENT RESEARCH REPORT

THE MOBILE OBSTACLE DETACHMENT  
OF THE SOVIET GROUND FORCES

MAJ OVERTON DAY  
1980

GARMISCH, GERMANY

APO NEW YORK 09053

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SOVIET GROUND FORCES

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Commanding

### SUMMARY

This paper examines employment of the mobile obstacle detachment in Soviet Ground Force operations. Historical development and employment are emphasized as they have a direct relationship to contemporary practice. Current employment is examined with stress on organizational and equipment capabilities in supporting modern antitank weaponry. The author has utilized US sources for most information on organization and equipment and Soviet sources for discussion of historic and contemporary employment concepts, as well as significant problems encountered in tactical usage.

CONTENTS

INTRODUCTION . . . . .	1
AN EMPHASIS ON COMBAT ENGINEERS . . . . .	2
HISTORICAL BACKGROUND . . . . .	4
THE MOBILE OBSTACLE DETACHMENT TODAY . . . . .	7
CONCLUSION . . . . .	13
FOOTNOTES . . . . .	15
BIBLIOGRAPHY . . . . .	18

## INTRODUCTION

Employment of natural and artificial obstacles is an integral part of modern ground force tactical operations. Obstacles of all types are used by forces for a wide variety of specific purposes, against both personnel and mechanized equipment. Generally, they are used to limit an enemy's maneuver opportunities, thus limiting his combat effectiveness with respect to that of the friendly force. Obstacles have assumed particular importance for forces which utilize or are threatened by highly mechanized combat units. Any measures which reduce flexibility of maneuver also reduce the enemy's ability to deliver effective firepower and, relatively, enhance options available to the obstacle user. In this respect, obstacles may be thought of primarily as an economy of force measure.

The obstacles themselves range from advantageous use of natural terrain features to projected use of nuclear and chemical contamination. In a similar manner, their scope of use is very wide, ranging from specific point targets to barrier systems comprising combinations of artificial and natural obstacles. The purpose may be denial of an area to enemy forces, delay, canalization, casualty-production, or any combination of these. Period of utilization may range from hours, even minutes, to months and years.

Obstacles can also be a two-edged sword; that which one force may use advantageously today may be turned by circumstances to the opponent's benefit tomorrow. Increased emphasis on mechanized forces and inherent mobility in the achievement of combat objectives implies greater importance of all assets which tend to interrupt that mobility. Minefields and explosive destruction of point targets are but two specific types of obstacles which are widely used.

The purpose of this paper is to assess the mobile obstacle detachment (podvizhnyy otryad zagrazhdeniya--POZ) of the Soviet Ground Forces, a temporary task organization of primarily combat engineer assets specifically designed and created for optimizing minefield and explosive obstacle support to maneuver forces during combat operations, while minimizing possible benefit to opposing forces. In addition to the organization, equipment and theoretical capabilities, this paper will describe specific problems encountered in POZ employment. The latter encompass questions of control, mutual support, and adaptation of POZ functions to modern technological advances. Concluding comments include an assessment of this aspect of Soviet Ground Force operations.

The research approach encompassed a survey of recent issues of Voyennyy Vestnik (Military Herald)<sup>1</sup> and several important Soviet books on combined operations and engineer support. Additionally, certain English-language sources were utilized. It should be noted that relatively little mention is made of the mobile obstacle detachment in the available English-language literature, with one notable exception.<sup>2</sup> Soviet sources generally provide a limited view of the mobile obstacle detachment and articles usually concentrate on particular employment problems. Although mining operations and minefields are frequently mentioned, only those specific references to the mobile obstacle detachment were considered relevant.

### AN EMPHASIS ON COMBAT ENGINEERS

Despite Western knowledge of the general nature of Soviet ground combat capabilities and intentions (combined arms, speed, emphasis on offensive action), the integrated efforts of supporting arms are often overlooked or relegated to a position of relatively low importance.<sup>3</sup> Although the mobile obstacle detachment comprises only a very small part of the combined arms effort, a look at the overall emphasis placed on engineer support deserves note.

Specialization of engineer units and equipment, and the consequent capability for specialized employment, have reached a high level in the Soviet Ground Forces. An illustration of the level of motorized equipment available to engineer troops in general is afforded by the measure of "horsepower per soldier." In 1972 the following figures were published: tank podrazdeleniya [subunits], 120 hp; engineer, 60-90 hp; artillery 20-30 hp; and motorized rifle, 20-25 hp.<sup>4</sup> Such figures do not relate directly to the mobile obstacle detachment or to any other specific aspect of tactical employment, but they do reflect the high priority given to development of engineer capabilities. It should be noted that the data are for subunits (platoons, companies/batteries, and battalions for others). Thus, the comparison shows the status of engineer mechanization relative to the other branches, emphasizing the operational level of organizations. Even though organizations with poor quality or obsolete equipment could possibly have a better "horsepower per soldier" ratio than those with modern equipment, it is doubtful that such a factor significantly influenced Soviet data in 1972. By that time all branches of the Soviet Ground Forces were undergoing extensive modernization, but they were already mechanized. Soviet engineer troops have always received a high priority in equipment development and deployment.

Further emphasis on specialization of engineers is given in the following passage from Taktika (Tactics), the authoritative Soviet reference on that subject:

In view of the great variety of tasks solved by engineer troops, these forces are nonuniform: each subunit of engineer troops has its own specialization and its own function....Although engineer subunits are specialized, this does not mean that, in necessary situations, they cannot be drawn upon for the fulfillment of other jobs.

In contemporary conditions it is necessary to conduct the selected measures of engineer support in very short periods, and this can be achieved only when wise use is made of highly productive engineer equipment for carrying out engineer operations.<sup>5</sup>

The last illustration concerns preparation of rest and assembly areas, but again demonstrates the importance accorded to the execution of engineer tasks: "Personnel of subunits of all arms of the service are enlisted in engineer support. In this, motorized rifle and engineer subunits may allot 70-80% of personnel, artillery--60-70%, tank--50-60%, rocket--30-40%."<sup>6</sup> Such emphasis on engineer tasks as noted above will be addressed later in the paper as it applies to the mobile obstacle detachment.

An appropriate starting point for definition of the mobile obstacle detachment is the specific entry which is provided in the Sovetskaya Voyennaya Entsiklopediya (Soviet Military Encyclopedia):

MOBILE OBSTACLE DETACHMENT (POZ), a temporary combat formation, created in motorized rifle podrazdelenya (chast') [subunits and units up to regiment] from engineer troops for the construction of minefields and conduct of demolitions. It is an element of a combat formation (tactical order of battle) of troops. Utilizing mechanized means, it mines terrain with antitank and antipersonnel mines on axes of attack and counter-attack (counterstrokes) of the enemy, covers with obstacles deployment boundaries of its own troops, open flanks of regiments and soyedineniya [corps, divisions, brigades], junctions and intervals between them, and also sectors of seacoast on land and in the water, on exposed axes of landing of enemy assault forces, etc. Upon allocation of tasks to the POZ the following are indicated: area of disposition, displacement route, possible axes or zones of activity, and mining boundaries. The POZ fulfills its tasks sometimes independently or in coordination with combined arms podrazdelenya (chast'), antitank troops, and/or reserves.<sup>7</sup>

Before elaborating on the historical and contemporary utilization of the mobile obstacle detachment, it will be useful to place it into proper perspective. There are three additional special-purpose functional groupings of combat engineers which are utilized in direct support of tactical operations:

- a. The engineer reconnaissance patrol, IRD (inzhenernyy razvedyvatel'nyy dozor) performs advance reconnaissance activities for higher-level engineer organizations in order that following units may properly prepare for tasks.
- b. The movement support detachment, ODD, (otryad obespecheniya dvizheniya) performs a wide variety of tasks in support of tactical unit movement, ensuring maintenance of high rates of advance. It is equipped for overcoming obstacles to movement and expediently improving routes of advance.
- c. The reconnaissance/obstacle clearing detachment, ORR, (otryad razvedki i razgrazhdeniya) operates in conjunction with the OOD. The ORR normally works ahead of the OOD as an initial reconnaissance/route preparation detachment.

All three detachments are normally composed of appropriate engineer assets, troops which provide security and troops which perform special functions, such as CBR reconnaissance.<sup>8</sup> These three functional groupings plus the mobile obstacle detachment illustrate flexibility in Soviet use of combat engineers, as well as specialization. All are drawn from sapper, engineer reconnaissance, road and road-bridge subunits. Ponton bridge and assault crossing subunits are normally not used for such tasking due to their specialized equipment.<sup>9</sup>

## HISTORICAL BACKGROUND

An understanding of the mobile obstacle detachment's use can be seen in the following historical summary:

Theoretically, the bases for creation and use of the POZ [until 1943 they were called obstacle detachments] were worked out by the distinguished contemporary military engineer D. M. Karbyshev in the work Razrushenya i Zagrazhdeniya (Demolitions and Obstacles) (Moscow, 1931).

From 1943 in fronts and armies, and then in divisions, POZ started to be created as temporary formations intended for fulfillment of tasks in mining terrain and preparation of bridges and other objects for demolition. Composition of the POZ was varied and determined by conditions of the situation. Podrazdeleniya (chast') of engineer troops equipped with vehicles composed their basis. All POZ were equipped with explosives, antitank mines, and anti-personnel mines.

The bases of POZ tactics in the offense and defense were developed during the Battle of Kursk in 1943. As a rule, in the defense they were located in the depth of the combat formations of troops, in areas which permitted them to maneuver on the axes of greatest threat. In the course of combat the POZ moved forward on order and mined terrain in sectors of active enemy attack or breaches in the friendly tank and infantry forces. In the offense they were used in repulsing counterattacks and for covering open flanks and functions between units. Experience gained in the years of the Great Patriotic War convincingly testified to the advisability and necessity of creating POZ with the capability to move forward and establish minefield obstacles on threatened axes<sup>10</sup> during the course of battle.

It should be noted that D. M. Karbyshev's work, mentioned in this passage, was followed by others. The early 1930s marked significant advances in the development of Soviet combat engineer employment doctrine,<sup>11</sup> as well as in other aspects of the armed forces. Much of this was probably due to German-Soviet collaboration in military research, production and training which was carried out in the Soviet Union until 1933.

During the Battle of Kursk (July 1943), noted as a major turning point in the war, the mobile obstacle detachment was used extensively, based on experience gained earlier in the war.<sup>12</sup> That experience is worth relating as it illustrates several different employment variations.

The earliest reference to the POZ as a "mobile reserve of engineer forces and means" was concerned with defensive operations in the Winter Campaign of 1941. On the western approaches to Moscow a motorized engineer battalion was assigned the mission as the "mobile reserve" mentioned above, equipped with 5000 mines, explosives and other means for rapid obstacle construction in coordination with maneuver forces.<sup>13</sup> It was probably one of the earliest uses of minefield obstacles with mobility and maneuver emphasized, in contrast to the traditional use of mines;

i.e., carefully planned and executed well in advance of enemy forces, not in direct coordination with ongoing maneuver. The same source quotes a relevant remark made by then General of the Army Zhukov. In speaking to the Chairman of the State Defense Committee on 8 December 1941, he is reported to have said:

...in recent battles the interaction with the combat engineer units on the battlefield has improved significantly....The subunits of combat engineers-commandos with antitank mines advanced in the direction of movement of the tanks and quickly placed the mines sometimes in direct proximity to the enemy tanks....In the battle at the village of Akulovo, the tanks were driven into the minefields by the barrage of artillery fire, and they suffered great losses. Measures were taken to extend this coordinated experience to all of the front-line armies.<sup>14</sup>

Another example illustrates the defensive use of combat engineers in close proximity to enemy forces and in coordination with maneuver units, but apparently without direct assistance or support from the latter. The speed of the German advance into the Caucasus required that an engineer minelayer battalion be divided into four groups, each with the mission of placing mines along a separate line of the German armored advance. "Considerable" enemy losses were attributed to the groups' activities.<sup>15</sup>

Close coordination between mobile obstacle detachments and other units was also achieved. The next example comes closer to the contemporary mode of employment for the POZ in a defensive situation. In October 1942 an antitank artillery regiment, separate combat engineer battalion and one company of a separated motorized engineer battalion combined efforts in resisting a German armored advance. Total enemy combat vehicle losses were put at 59, due to both mines and artillery, the latter benefiting from the canalizing effect of minefields.<sup>16</sup>

Composite obstacle groupings were also utilized. One example which appears in the literature was composed of an engineer battalion, a rifle battalion, and two batteries of antitank artillery. It was commanded by the rifle battalion commander.<sup>17</sup> Another example shows somewhat different composition, undoubtedly due to special circumstances. Within the rifle divisions of one army of the Stalingrad Front, such groupings were composed of two combat engineer platoons, a rifle company or platoon, one or two machine gun platoons, three or four anti-tank weapons, and an antitank gun subunit.<sup>18</sup>

All of these examples occurred prior to the Battle of Kursk. Consistent with the enormous build-up of forces in the Kursk salient in late spring of 1943, where a German attack was expected, heavy reinforcement with combat engineer units took place. One army was reinforced with four special-purpose engineer battalions, another with two such battalions. At lower levels, a general rule for establishing mobile obstacle detachments was applied. Each corps designated a combat engineer company, rifle divisions used one or two combat engineer platoons, and rifle regiments used a squad to platoon-size force.<sup>19</sup> These latter mobile obstacle detachments, apparently of relatively small size, were normally constituted from organic combat engineer assets, not those assets attached from higher level commands.

A further elaboration on POZ tactics was developed and generally applied during the Kursk operations. Combat engineer companies designated as POZ would assign tasks by platoons, each of which would then divide into two groups. Each platoon would cover an axis of enemy advance. Then each half-platoon would mine an area, cover the minefield by its own fires (against breaching by enemy troops), and

finally leapfrog over the other half-platoon which had been mining further to the rear. In such a manner the line of enemy advance could be mined in depth without going too far astray of that line. Maintaining close contact with the enemy, and literally mining those areas to which he had already committed himself, is reported to have had a devastating effect on the enemy, both in terms of direct losses and interruption of his momentum.<sup>20</sup>

Although the source utilized for most of these examples concentrates on use of mobile obstacle detachments in defensive operations, the author also notes tactical obstacles emplaced by POZ later became effective in offensive operations. The importance of mobile obstacle detachments and related measures had been recognized early in the war; assignment of engineer reserves to mining operations on axes of armor threat became mandatory during the spring and summer campaigns of 1942.<sup>21</sup>

Schematic illustrations of typical force deployments developed through the course of World War II show wide application of mobile obstacle detachments at different organizational levels. In the defense, for example, the typical front is shown with several armies forward, and several reserve groups including two mobile obstacle detachments. The schematic also shows ideally that one POZ would move forward in support of antitank artillery, which in turn moved in support of a tank army. The other POZ moved forward in support of a tank corps. Each mobile obstacle detachment consisted of a combat engineer battalion.<sup>22</sup>

Defensive employment of the POZ at lower levels reflected a similar pattern by 1945. Schematics showing an army with two infantry corps forward, and a tank army with three corps forward, show mobile obstacle detachments located alongside tank and artillery reserves; where unit size is indicated, the POZ consists of an engineer company. Again, hypothetical forward movements are illustrated.<sup>23</sup> A schematic of actual defensive operations of the 6th Tank Army in February 1944 shows one mobile obstacle detachment at army level, one for a rifle corps, and one for a tank corps.<sup>24</sup> Organization of the defense at corps<sup>25</sup> and division<sup>26</sup> levels follows the same pattern.

In offensive operations, World War II experience likewise resulted in comprehensive employment of mobile obstacle detachments. According to idealized schematics, POZ were utilized (by 1945) in all major offensive formations except the tank army.<sup>27</sup> Location of mobile obstacle detachments was consistent, always near the reserves (especially armor and antitank artillery) and behind second echelon forces. The POZ normally was located relatively deep in the formation, just ahead of major organic artillery assets.<sup>28</sup> Mutual support of all antitank assets was emphasized and planned POZ activities (insofar as possible) were integrated with other means of repelling enemy armor.<sup>29</sup> Thus the POZ was utilized solely as a defensive measure against enemy armored counterattacks.

### THE MOBILE OBSTACLE DETACHMENT TODAY

Basic employment principles of the mobile obstacle detachment appear to have changed relatively little since World War II; changes relate primarily to the impact of technology on ground forces as a whole. The primary mission of the POZ remains stable--effective countering of enemy armored forces. Mining along axes of enemy advance, in concert with antitank forces, remains the basic task in the defense. Utilization in offensive operations is somewhat more aggressive due to POZ deployment on axes and sectors to which the enemy has already committed himself. In the offense the goal is realized by covering open flanks, particularly during commitment of second echelon forces in conjunction with a breakthrough. Additionally, the POZ assists in securing captured positions. In the meeting engagement, POZ operate primarily on the axis of the holding attack, in support of main body deployment.<sup>30</sup> Emphasis is always on sectors and axes of greatest potential (and actual) enemy threat in both defensive and offensive operations.

This section deals with the mobile obstacle detachment under contemporary conditions, as it is presented in open Soviet media. In consonance with the high level of mechanization throughout Soviet forces, the combat engineers are organized and equipped to effectively support maneuver forces in many ways. The mobile obstacle detachment is unique among the specialized engineer-oriented task groupings because it requires assets (in forming its core) which are specially structured to perform minelaying missions.

Organizationally, combat engineer assets organic to motorized rifle and tank regiments and divisions are well suited for assignment to the mobile obstacle detachment mission. At regimental level, the engineer sapper company is composed of a sapper minelaying platoon, two sapper platoons (mainly intended for obstacle breaching and general combat engineer work), a road bridge platoon, and some headquarters/service elements.<sup>31</sup> The company is well equipped for performing a great variety of tasks; platoon designations indicate the range of tasks. The sapper minelaying platoon is equipped with three PMR-3 (pritsepnvy mino-raskladchik--towed minelayer) or PMZ-4 (pritsepnny mino-zagraditel'--towed minelayer) and three trucks or armored personnel carriers. Some units may be equipped with the GMZ (gusenichnyy mino-zagraditel'--tracked minelayer) rather than towed minelayers of the PMR/PMZ type. The GMZ is an armored vehicle which offers more crew protection during operations.<sup>32</sup> In the latter case, the sapper minelaying platoon would not have additional vehicles (trucks or armored personnel carriers), but would rely solely on the GMZ for personnel and materiel transport.

The engineer battalion found in motorized rifle and tank divisions also contains dedicated minelaying assets. The battalion has one minelaying platoon (in its engineer sapper company) which is equipped as described above.<sup>33</sup>

Specific minelaying capability depends on several factors. Foremost among them are the types of equipment available and mode of employment. Each type of mine-layer is capable of surface and subsurface emplacement. Optimum theoretical minelaying rates vary from approximately 600 mines per hour (subsurface) to about 2500 mines per hour (surface), based on speed of travel. However, theoretical rates cannot be achieved in the field, even under ideal conditions. While speed would depend largely on terrain conditions, mine supply depends on the type of towing vehicles (capacity) and reload efficiency. Estimated load capacity for possible tow vehicles is as follows: BTR 60, 100-130 mines; ZIL 157 truck, 200 mines; Ural 375 truck, 350 mines. The GMZ tracked minelayer can carry 180-200 mines.<sup>34</sup>

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Maintenance of high minelaying rates requires an adequate number of tow vehicles (for the PMR-3 and PMZ-4), conveniently situated mine dumps and very efficient reloading. Due to limited tow vehicle assets organic to the sapper minelaying platoon, additional vehicles from other units would be required. One source discussed these problems in more detail and concluded that a sapper minelaying platoon (using all three towed minelayers) can emplace under conditions of reasonable efficiency, about 1200 antitank mines in 50-60 minutes. In the case cited, POZ vehicles were of the BTR type, and additional similar vehicles were used for reload. This assumed attachment of extra vehicles from another unit.<sup>35</sup> That assessment of capability is undoubtedly more realistic than that which is represented by theoretical minelaying rates. Nevertheless, it should be kept in mind that if a POZ is given a sufficiently high priority, and supporting assets to go along with that high priority, very high minelaying rates could be achieved over a limited time period. For instance, the same source above notes that 600 mines could be emplaced in 15-20 minutes.<sup>36</sup>

Size, type and location of minefields also have a direct bearing on mining efficiency and overall effectiveness of the POZ antitank function. Two outmoded concepts deserve mention since they illustrate the variety of thought given to the POZ problem. During the 1960s and early 1970s it was widely maintained that at motorized rifle regiment level the antitank gun battalion (18 guns of the T-12 variety) should be employed in separate batteries along a 6-7 km front. The mobile obstacle detachment would place minefields in those sectors not covered by adjacent batteries. This concept has now been discarded in favor of employing the antitank gun battalion on a single sector. Choice of that sector has become crucial.<sup>37</sup> Minefields are placed, and other obstacles created, within the sector of fire. Mining efficiency is increased due to greater concentration of engineer effort. Potential effectiveness is also increased. Another concept which has been discarded is that of mining in relatively thin (in terms of minefield density and physical width) continuous strips on a long front, rather than in depth,<sup>38</sup> as they can be too easily breached by attacking forces.

Current mining doctrine for mobile obstacle detachments incorporates the principles of coverage by fire and obstacles in depth.<sup>39</sup> Minelaying boundaries are established so that all existing and future obstacles are included in the fire sector of deployed antitank weapons. The outer boundary of the obstacle zone is determined by the maximum effective range of antitank weapons. However, location of the inner boundary is a matter of recent concern. One source suggests that the inner boundary be located at least as far from primary antitank weapons as their minimum effective range.<sup>40</sup> For example, the AT-3 SAGGER ATGM has maximum and minimum effective ranges of approximately 3000 and 500 meters, respectively; the latter is due to the gunner's inability to gain full control of the missile inside that range. Thus, if the SAGGER is the primary antitank weapon, and if the above suggestion is followed, one would expect the obstacle zone to be approximately 2500 meters deep. Width of the obstacle zone, of course, would depend on terrain and the number and spacing of weapons.

The emphasis on mining in depth has resulted in the use of a relatively large number of minefields and point targets, overlapping coverage, and appropriately higher demands on mobile obstacle detachments. Variations will depend on terrain and time and assets available for obstacle emplacement.

One example in the literature showed a hypothetical problem in which the mobile obstacle detachment made three separate forays into the obstacle zone, each time installing minefields or preparing other obstacles. Ten minefields and three point targets (mining a short section of road, mining a ford, and preparing a bridge for demolition) were shown in the scheme. The number of mines per minefield ranged from 50 to 70; scope of the other tasks was not indicated.<sup>41</sup>

Such a large number of separate tasks would seriously degrade efficiency if the tasks were widely dispersed and/or if the POZ were too small. However, in the case cited above, the tasks were concentrated in an area approximately 4000 meters long (frontage) and 2000 meters wide (depth). Also, they were divided into three groups of more or less equal demand on the POZ. Groups were determined by location (center, right and left portions of sector) and accomplished in sequence based on priority; i.e., the group of obstacles closest to the enemy and on the most crucial avenue of approach was completed first. In the scheme presented, even a squad acting as the POZ could accomplish all required tasks in several hours. An entire minelaying platoon could complete all obstacles very quickly (probably less than one hour) if each squad was assigned to one group of tasks and applying the minelaying rates discussed previously.

It should be noted that there are some fairly loose guidelines regarding POZ dispersal/concentration of effort. A sapper company acting as POZ can emplace minefields on two or three avenues of enemy approach and less frequently on more avenues, while simultaneously mining or otherwise preparing two or more objectives (point targets). Similarly, a sapper platoon can emplace minefields on one avenue (less frequently on two) and prepare one or two objectives.<sup>42</sup> An illustration of possible platoon effort is provided by the following:

While acting on one avenue, for example along a road which leads from the enemy to the friendly antitank reserve position, a sapper platoon can emplace several minefields of 50-100 mines each, while cutting the road in two or three places, and can prepare a bridge for demolition (or other road structure) and emplace mines on targets of opportunity.<sup>43</sup>

It is evident that guidelines allow for a great deal of flexibility in POZ deployment and that excessive dispersal of effort is entirely possible in highly fluid combat situations. The burden for concentrating on dispersing POZ activities rests with the combined arms commander, as does determination of POZ and antitank reserve size and composition, and the relationship between those elements.<sup>44</sup>

Several significant problems regarding POZ employment are openly discussed in Soviet sources. They can be grouped into two general problem areas which relate to operational effectiveness: the question of independent or mutually supportive POZ and antitank reserve operations, and command and control of the POZ. They deserve particular attention since they reflect problems of integrated combined arms effort. Additionally, they are closely associated matters which directly involve the combined arms commander, as well as subordinate commanders.

Command and control of the mobile obstacle detachment and the POZ-antitank reserve support relationship (if any) are specific determinations which are made and modified by the combined arms commander during the course of operations. The questions of command and control is clear-cut if the POZ is deployed independently or if combat circumstances interrupt a predetermined relationship between the POZ and antitank reserve; i.e., if combat conditions force the two elements to operate independently. The commands would indeed be independent of each other. However, there is not only a debate (in Soviet sources) regarding the desirability of independent or combined operations of the two elements, but also an inferred difference of opinion on who (commander of the POZ or the antitank reserve) should in fact "command and control" the POZ during combined operations.

The standard doctrinal approach to POZ employment is that it should operate in conjunction with the antitank reserve. But that does not answer the question of who supports whom. One source suggests that the matter must be approached

from the standpoint that the overall mission, repelling armored attacks or counter-attacks, requires that the antitank reserve be considered the element most directly responsible for fulfilling the mission.<sup>45</sup> It possesses the weapons with which enemy armor is actually engaged and repelled. However, the same source does not specify that the POZ plays a supporting role. Rather, the POZ is considered as an essential equal to the antitank reserve, and that the two elements' activities must be closely coordinated for maximum effectiveness.<sup>46</sup> Thus, the author opts for combined operations over independent POZ activities.

The advantages of combined, or mutually supportive, operations are based on the premise that obstacles must be covered by direct fire in order to maximize their effectiveness. The obstacles create "favorable conditions" for the delivery of antitank fires, by canalization, denial and slowing enemy movement, in addition to causing losses.<sup>47</sup> The essence of closely coordinated obstacles and antitank fires is that the effectiveness of each is enhanced by the other. An important but likewise intangible effect is that the presence of obstacles raises the confidence of antitank gunners, thus directly enhancing the delivery of fires.<sup>48</sup>

Another important benefit of combined operations is that the POZ is afforded security by the deployed antitank reserve. Due to equipment and personnel limitations, and concentration on obstacle preparation, the POZ is highly vulnerable to enemy attack. This factor takes on special significance when we consider that one of the main purposes of the POZ is emplacement of the obstacles directly in the path of advancing enemy forces.<sup>49</sup>

Finally, close coordination of elements enables the defense to be conducted in greater depth and density than that which can be achieved by either element acting alone. Successive obstacle zones can be established if previous positions prove to be inadequate for repelling the enemy. Antitank assets can leapfrog alternately with the POZ to secondary or alternate positions. Likewise, combined operations enable greater lateral movement without necessarily leaving old or new positions completely uncovered, as might be the case under conditions of independent operations.

Arguments in favor of independent POZ employment are largely based on World War II experience, some of which has been illustrated above. The rationale for independent employment is now based on two claims. First, the POZ can move faster and afford the combined arms commander greater flexibility when it is operated alone than when it is part of a combined force. Second, engineer troops composing the POZ can adequately cover their own obstacles utilizing organic antitank weapons.<sup>50</sup>

Greater speed and flexibility may be valid in that, generally speaking, small tactical units are inherently easier to move than large ones. Likewise, if displacement capability of the two elements involved (POZ and antitank reserve) is significantly different, then it may be advisable to employ them separately. However, in view of the importance of missions specified for the POZ and antitank reserve, whether operated separately or in combination, it appears more likely that the combined arms commander would direct separate movement to the same objective. In that way, the first element to arrive at the objective could start preparation of the defense and the later element would have to fit itself into the plan. This variant, of course, touches directly on the question of command control, which will be addressed below.

The second argument for independent POZ employment, that organic POZ antitank weapons can be used to provide sufficient direct fire coverage, does not appear to be valid in the context of contemporary weapons technology and mobility.

Weapons available to engineers are of the individual type; both range and number of weapons available are inadequate to cover the obstacles which a POZ can emplace in even a very short time period. Engagement of enemy armor would be well within the range of enemy tank guns, not at a range of approximately 3000 meters, as is the case if ATGMs are available in the antitank reserve. The number of weapons available imposes a similarly dangerous limitation. Either the width of the obstacle zone would have to be reduced to a frontage which could be easily bypassed (in most terrain) or the front would be so thinly covered that it could be easily breached. The only situation in which organic coverage would be sufficient is where terrain makes bypass virtually impossible and affords the engineer troops protection against direct enemy fire.

Except under ideal conditions independent POZ employment violates the basic principle of coverage by fire. This is considered a major weakness by several sources, one of whom points out that inadequate fire coverage may in fact benefit the enemy by allowing him to recover mines and use them for his own purposes.<sup>51</sup> Additionally, the POZ would be vulnerable to enemy attack if a security force is not present, resulting in a possible tendency to emplace obstacles which are not directly in the path of an advancing enemy. In such a case, POZ operations may be detected by the enemy early enough to allow his development of alternate combat plans. Or they may not be detected at all and simply not be in an area or on an avenue of approach to which the enemy is or will be committed. In either case, full potential value of the obstacles will not be realized.

Soviet sources emphasize that independent POZ activities do have a place in contemporary combat,<sup>52</sup> but that it should be used only under extreme conditions of enemy pressure, non-availability of sufficient friendly forces, time constraints, or ideal terrain. In any case, resulting defensive capability will be thin and the independently operating forces (both POZ and antitank reserve) will be vulnerable to enemy attack. But it does afford the commander greater flexibility in reacting to rapidly changing situations and deploying forces to meet a variety of threats in separate sectors.

The debate regarding command and control is concerned with the outwardly simple question of who should control POZ activities when the POZ is employed in combination with the antitank reserve. It brings into question the operational relationship of the two elements and how their joint and separate missions are perceived. There are three opinions on the command question: The POZ commander should have control over his own element and the antitank reserve, the antitank reserve commander should control the combined force, or that each should control his own element and simply cooperate and coordinate with the other. In any case, of course, it would appear that the commander(s) involved should be directly subordinate to the combined arms commander. However, the relationships are not that simple and even Soviet sources are unclear on many points. Therefore, in addition to addressing the advantages and disadvantages of each opinion noted above, it is worthwhile to look briefly at the organizational framework.

The regiment is the lowest level at which a POZ and antitank reserve can be formed from organic assets. One Soviet author notes "In resolving questions of coordination, no fewer than four responsible persons take part: the chief of artillery and the chief of engineering services, as well as the commanders of the antitank reserve and POZ."<sup>53</sup> Additionally, of course, the combined arms commander is involved. It is also asserted that the chiefs of artillery and engineering services, members of the regimental commander's staff, make the basic decisions regarding employment of respective assets, including "matters of subordination."<sup>54</sup>

When the two elements are employed independently, the chiefs of artillery and engineering services would ideally control their respective elements. This point is amply supported by one Soviet source.<sup>55</sup>

But the question of subordination in combined operations still remains open. The same source cited above advances the notion that the POZ commander should be subordinated to the antitank reserve commander.<sup>56</sup> Justification is based on the latter's mission; i.e., the antitank reserve commander actually has the responsibility (and means) to effectively engage enemy armor. The POZ creates "favorable conditions" for the artillerymen and thereby contributes to accomplishment of the general mission. Despite the implication that the POZ is therefore of secondary importance, the author emphasizes that "both may be of completely equal value and depending on the situation must closely coordinate their activities, each with the other." So the stress is on mutual support and cooperation in "striving for the same goal."

There is virtually no discussion by Soviet authors of the variation in which the POZ commander actually exercises command over the antitank reserve. Rather, the presence of such a variation is inferred from the vigorous defense of the opposite situation, as explained above. Support for the POZ commander exercising the superior role probably exists at a level lower in the officer corps than that which is published in Voyenny Vestnik. The available literature may be an effort to keep dissenting opinion in its place. Moreover, proponency for subordination of the antitank reserve is probably based on the less-than-desirable capability for independent POZ employment, another carryover from World War II experience.

The third and final possibility for command and control, equal but separate elements and commanders, likewise receives little attention. One Soviet author considers such an arrangement infeasible when the two elements operate together.<sup>58</sup> The most striking feature of dual control is the possibility that simple cooperation may break down.<sup>59</sup> This immediately forces even small problems of coordination up to a higher command level for resolution.

## CONCLUSION

From the foregoing it appears that the mobile obstacle detachment is an effective adjunct to normal combat formations in the Soviet Ground Forces. It also appears that because of its varied missions and dependence on the combined arms commander's assessment of combat conditions, POZ composition--and that of the antitank reserve--is tailored to the specific situation. And, unlike regular combat formations which enjoy a permanent existence and operate according to well established patterns, the POZ is likely to appear and disappear on the battlefield quite irregularly according to the commander's estimate of enemy intentions. Generally, employment in a future conflict would probably follow the same basic pattern which was developed during World War II; that is, the POZ was held in reserve or activated when an actual threat developed. Under contemporary conditions, employment variations are greater due to the increased mobility of all forces and a greater potential for rapid changes in the combat situation. Additionally, the POZ now is inherently more capable to prepare obstacles (especially minefields) than its World War II counterpart, so theoretically it can be utilized to do more in a given amount of time, as well as on a greater area of the battlefield. However, it appears that there are some important limitations to potential employment of the mobile obstacle detachment.

The Soviets have developed a wide array of specialized minelaying equipment which underscores the importance they attach to rapid minefield emplacement. But there is a trade-off between minelaying rates on the one hand, and, on the other hand, such factors as mobility, personnel protection and ease of replenishing expended mines. The various types of minelayers illustrate this point. The towed minelayers (PMR/PMZ) provide potentially high minelaying rates and mobility, depending on terrain and the type of prime mover utilized. Moreover, the mine supply can be easily replenished (thus sustaining high minelaying rates) if pre-loaded prime movers are moved to the minefield and trade places with empty prime movers. However, additional activity may raise the possibility of enemy detection, especially if the POZ is operating relatively close to an advancing enemy force. And then there is a direct trade-off between the relatively high crew protection afforded by armored personnel carriers (as prime movers) and their relatively low mine carrying capacity. The GMZ minelayer, on the other hand, affords good crew protection and cross-country mobility, but must return to a mine supply point or be reloaded by hand at the mining location. In the former case, sustained minelaying rates will be low; in the latter case, the advantage of crew protection is compromised.

It should be noted that vehicles other than the prime movers are required to maintain an effective mine supply, whether that supply is brought forward directly to the minefield or established somewhere to the rear. Soviet sources do not identify the source of those vehicles or discuss how mine supply operations should be handled. It is clear that the vehicles do not come from engineer element which comprises the POZ itself. They would likely come from other elements of the parent combat engineer unit, and mine supply operations would be controlled by the chief of engineering services. The latter appears to be the lowest point of coordination and common control shared by the POZ and its parent organization.

The second major limitation to POZ activities is the unclear relationship between commanders and staff officers, particularly between the POZ and antitank reserve commanders. It is evident from the discussion and debate in Soviet writings that the matter is a source of some concern. The writings are probably a fair reflection of contention in the field, as well as the theoretical level.

The debate over who should command the POZ in combined operations illustrates the lack of a standard superior-subordinate relationship which, to this author, reflects fundamental confusion over the respective roles of the POZ and antitank reserve. Although it is relatively easy to explain the debate by saying that each case is unique and it is up to the commander's discretion, lack of a standard relationship seems to be inconsistent with the time-criticality of POZ/antitank reserve activation and deployment. The POZ appears to be clearly in the supportive role, but as the discussion illustrates, the Soviets may not always take that position.

Concerning the POZ and its interaction with the antitank reserve, it appears that there are too many actors involved. Furthermore, there is no clear distinction in Soviet sources between such terms as command, control and coordination. In the preceding discussion, the role of the chief of engineering services is especially confusing; at times he appears only as a point of coordination but at other times performs a controlling function.

The third major limitation is vulnerability. Combat engineers do not have the weapons required to effectively engage enemy armor, the type of force with which they would most likely make contact. Nor do they have the primary mission to do so. Soviet sources generally acknowledge this as a major argument against independent POZ employment, while asserting that such employment is desirable under special circumstances and should be limited to conditions wherein the combined arms commander has inadequate forces and/or time at his disposal; it is interesting to note that Soviet authors do not discuss this matter.

Another deficiency in Soviet sources is failure to directly address the possible linkage between vulnerability and the command and control problem in combined operations, although it may be a consideration in support of arguments for or against specific superior-subordinate relationships. Confused chains of command and coordination would not only hinder integration of the POZ and antitank reserve in fulfilling the overall mission. Although close cooperation between commanders on the ground may work well in theory, it may break down under the stress of combat. Unnecessarily exposing either the POZ or antitank reserve, due to a lack of counterpart cooperation in establishing defenses, would defeat the purpose of both combat elements.

All of the problems cited need not detract from the potential effectiveness of the mobile obstacle detachment. The problems relate to the integration and tactical management of highly mobile and technically advanced combat engineer and antitank forces. Increasing Soviet capability to repel enemy armor is paralleled by an increasing threat. As antitank weaponry is developed further, greater emphasis will likely be placed on minelaying methods which provide greater flexibility of maneuver and, ideally, greater responsiveness to enemy threats as they are perceived by the tactical commander. It is reasonable to expect greater future emphasis on the use of helicopters for the transport of both the POZ and antitank reserve, and their logistic support. Likewise, the use of scatterable mines and helicopter-mounted antitank weapons will probably become a supplement to ground operations. But until such costly technological changes are accomplished, the mobile obstacle detachment will likely remain as a well-proven technique.

#### FOOTNOTES

1. Voyennyy Vestnik is an unclassified monthly publication of the Soviet Ministry of Defense. Articles deal with various aspects of combined arms combat, emphasizing tactics and training of all branches of the Soviet Ground Forces up to and including battalion level. The primary target audience is the officer corps serving at that level.
2. The best general discussion of the mobile obstacle detachment is provided by C. N. Donnelly, "Combat Engineers of the Soviet Army," International Defense Review, Vol. 11, No. 2 (1978), pp. 197, 200, 204. Additionally, the POZ is mentioned often in the context of combat operations in Department of the Army, Field Manual 30-102, Opposing Forces Europe (1977), and Department of the Army, Soviet Army Operations, Publication IAG-13-U-78 (1978). However, neither DA publication provides a detailed discussion of the POZ itself.
3. Two general areas of Soviet combat engineer capability, tactical bridging and minefield breaching, are widely acknowledged. They have attracted considerable attention in the West, to the point of reverse engineering certain types of Soviet equipment such as the US "ribbon bridge".
4. V. Ya. Plyaskin, I. F. Lysukhin and V. A. Ruvinskiy, Inzhenernoye obespecheniye obshchchevoyskovogo boya (Moskva: Voyenizdat, 1972), p. 21. The use of Soviet unit designations requires some clarification since there are no exact equivalents in the English language. Those used in this paer are the following: Soyedineniye--Formation. It is the equivalent level of a Corps, Division or Brigade. Chast'--Unit. It is any basic tactical or combat organization which carries a specific numbered designation, normally the regiment or independent battalion. In Soviet combat engineer organizations, the engineer battalion is a chast' (unit). Each unit is composed of subunits (Podrazdeleniye). This term encompasses all permanent organizational levels which comprise units. Subunits do not have number designations. Battalions (except engineer and other independent battalions), companies, batteries, and platoons fall into this category. These definitions are taken from Radziyevskiy, A. I. (ed.), Dictionary of Basic Military Terms, (Moscow: Military Publishing House, 1965). Translated and published by the US Air Force.
5. V. G. Reznichenko, Taktika (Moskva: Voyenizdat, 1966), p. 154.
6. Plyaskin, et al., p. 91.
7. N. V. Ogarkov (president of editorial commission), Sovetskaya Voyennaya Entsiklopediya, Volume 6 (Moskva: Voyenizdat, 1977), p. 374.
8. Arthur J. Parr, Jr., Soviet Combat Engineer Support (Thesis, US Army Russian Institute, 1978), pp. 36-40, 44-45.
9. Ibid., p. 18.
10. Ogarkov, Vol. 6, pp. 374-5.
11. Ogarkov, Vol. 3, p. 540, and Kenneth R. Whiting, The Development of the Soviet Armed Forces, 1917-1977 (Air University, Maxwell Air Force Base, Alabama, 1977), pp. 21, 24.
12. V. Sidorov, "Manevr zagrazhdennyami," Voyennyy Vestnik, No. 6 (1976), p. 99.

13. Ibid., p. 98.
14. Ibid.
15. M. Zlatkovskiy, "O podvizhnom otryade zagrazhdeniya," Voyenny Vestnik, No. 9 (1975), p. 97.
16. Sidorov, pp. 98-99.
17. Ibid., p. 99.
18. Ibid.
19. Ibid.
20. Ibid., pp. 99-100.
21. Ibid., p. 99.
22. Istoriya voyn i voyennogo iskusstva: al'bom skhem, diagram no. 35.
23. Ibid., diagram no. 36.
24. Ibid., diagram no. 40.
25. Ibid., diagram no. 38.
26. Reznichenko, p. 348.
27. al'bom skhem, diagrams no. 33, 34, 37. Also see Reznichenko, p. 270.
28. Ibid.
29. Reznichenko, pp. 271-273, 333, 347.
30. Zlatkovskiy, p. 97.
31. Parr, p. 19.
32. Ibid.
33. Ibid., p. 22.
34. Donnelly, p. 204.
35. Plyaskin, et al., p. 134.
36. Ibid.
37. Donnelly, p. 204.
38. Ibid., and Plyaskin, et al., pp. 135, 253.
39. Ibid.. See also V. Molzinsky, "The Mobile Minelaying Detachment," translation of Voyenny Vestnik No. 11 (1977) by HQ, DA, ACSI. Translation no. K-8650 dtd. 29 Dec. 1977, pp. 166-169.

40. Molzinsky, p. 168.
41. Ibid.
42. Plyaskin, et al., p. 137.
43. Ibid.
44. Plyaskin, et al., p. 95 and Molzinsky, p. 167.
45. Molzinsky, p. 167.
46. Ibid., p. 166.
47. Ibid.
48. A. Limno, "Kak deystvovat' podvizhnomy otryadu zagrazhdeniy," Voyenny Vestnik, No. 10 (1976), p. 101.
49. Molzinsky, pp. 167-168.
50. Limno, p. 100.
51. Ibid.
52. Ibid., pp. 100-101, and Molzinsky, p. 167.
53. Molzinsky, p. 167.
54. Ibid.
55. Ibid., p. 168
56. Ibid., pp. 166-168.
57. Ibid., p. 166.
58. Ibid., p. 168.
59. Limno, p. 101.

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